



37<sup>th</sup> FAA Aviation Forecast Conference



Federal Aviation  
Administration

# GLOBAL AIR TRANSPORT OUTLOOK

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**ICAO**

Chief Economic Analysis & Policy Section

Washington 9 March 2012



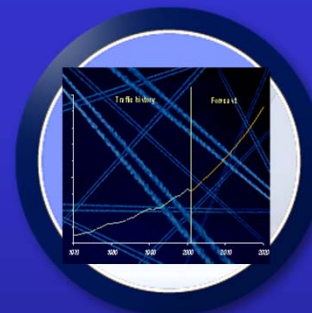
# Content



**2011  
revisited**



**Industry  
Trends**



**Forecasts**



**Planning  
Impact**



# Regional traffic overview for 2011

## North America

Traffic: +2.5%  
Capacity: +3.1%  
Load Factor: -0.1 Pt

## Europe

Traffic: +8.9%  
Capacity: +9.1%  
Load Factor: -0.6 Pt

## Asia Pacific

Traffic: +6.3%  
Capacity: +5.8%  
Load Factor: +0.4Pt

## Latin America

Traffic: +7.5%  
Capacity: +2.2 %  
Load Factor: +3.9 Pt

## Middle East

Traffic: +11.9%  
Capacity: +13.4%  
Load Factor: -0.9 Pt

## World

Traffic: +6.4 %  
Capacity: +6.5 %  
Load Factor: -0.1 Pt

## Africa

Traffic: +4.7%  
Capacity: +6.1%  
Load Factor: - 0.9 Pt

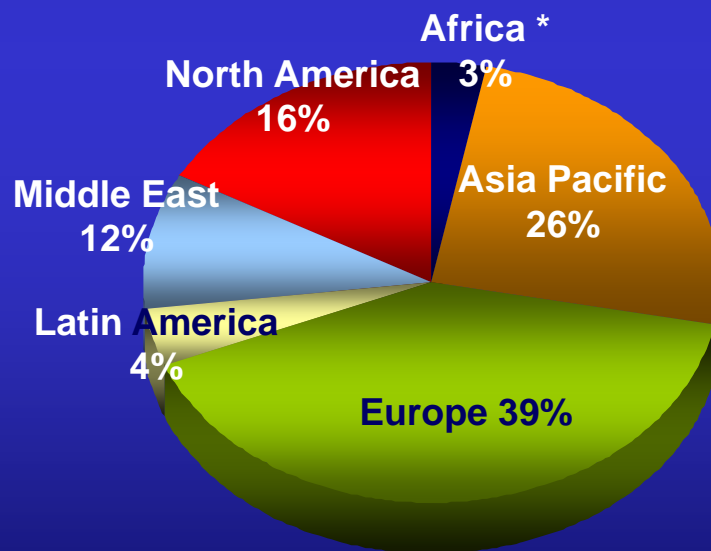
Source: ICAO



# Market shares\* achieved

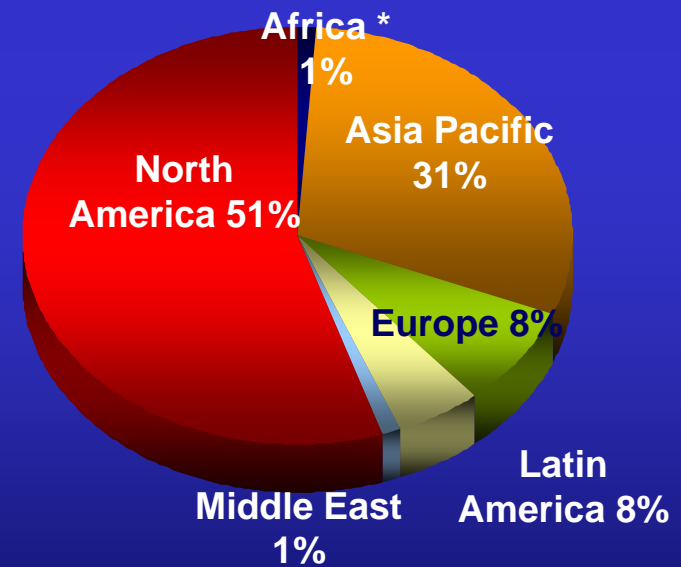
***International traffic represents 61% of the total passenger traffic***

***International passenger traffic\*\****



\* Market share of the scheduled traffic of the airlines domiciled in the region

***Domestic passenger traffic\*\****

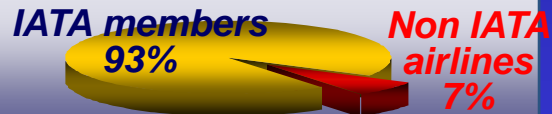


\*\*Expressed in Revenue Passenger Kilometre

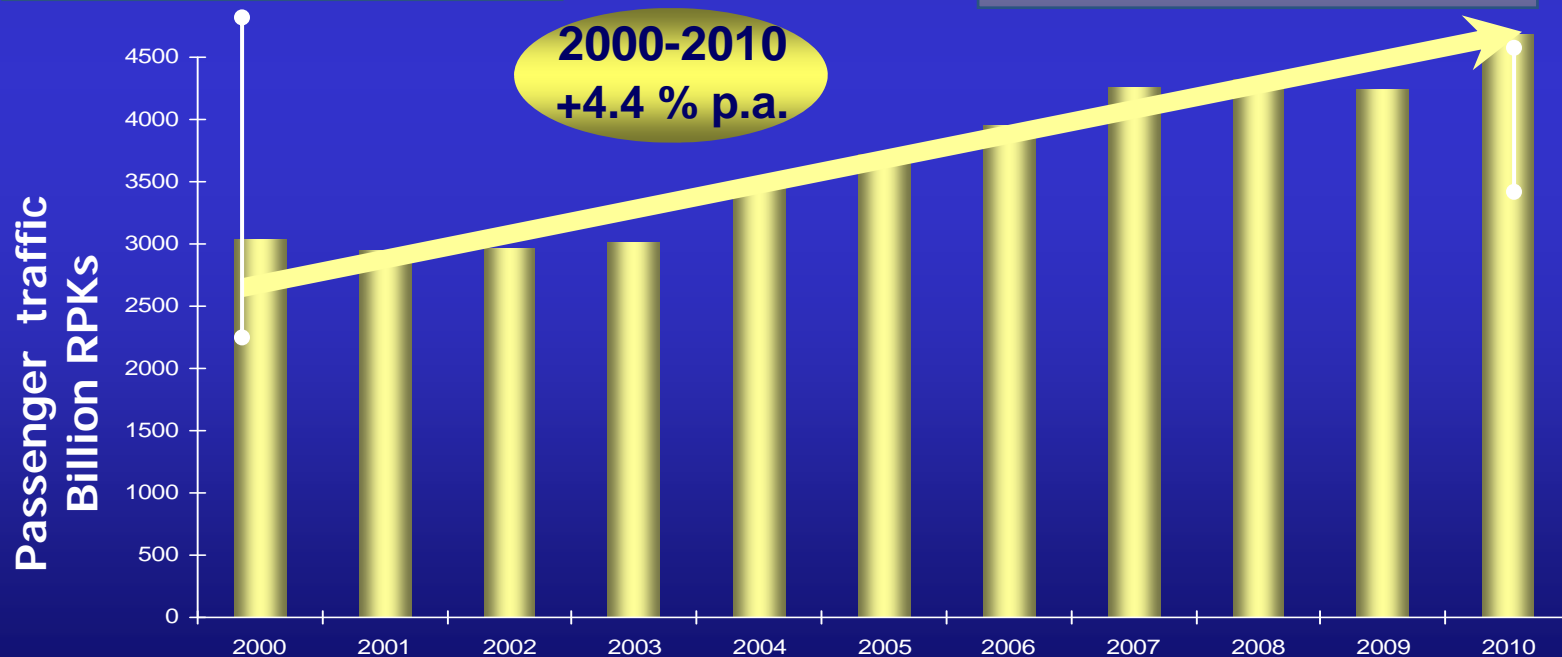


# Last decade traffic growth

Passenger traffic market share  
By airline type



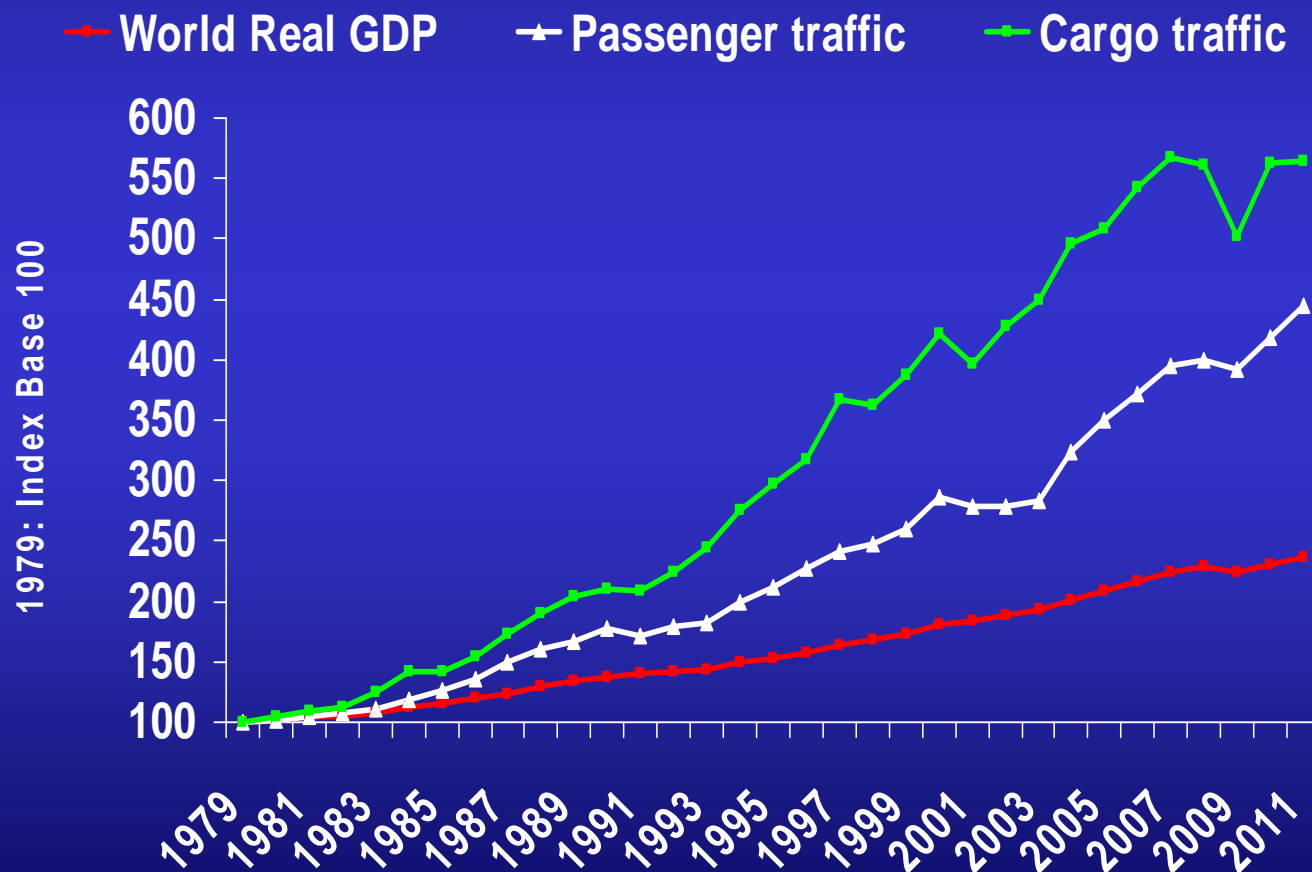
Passenger traffic market share  
By airline type



Source: ICAO, IATA



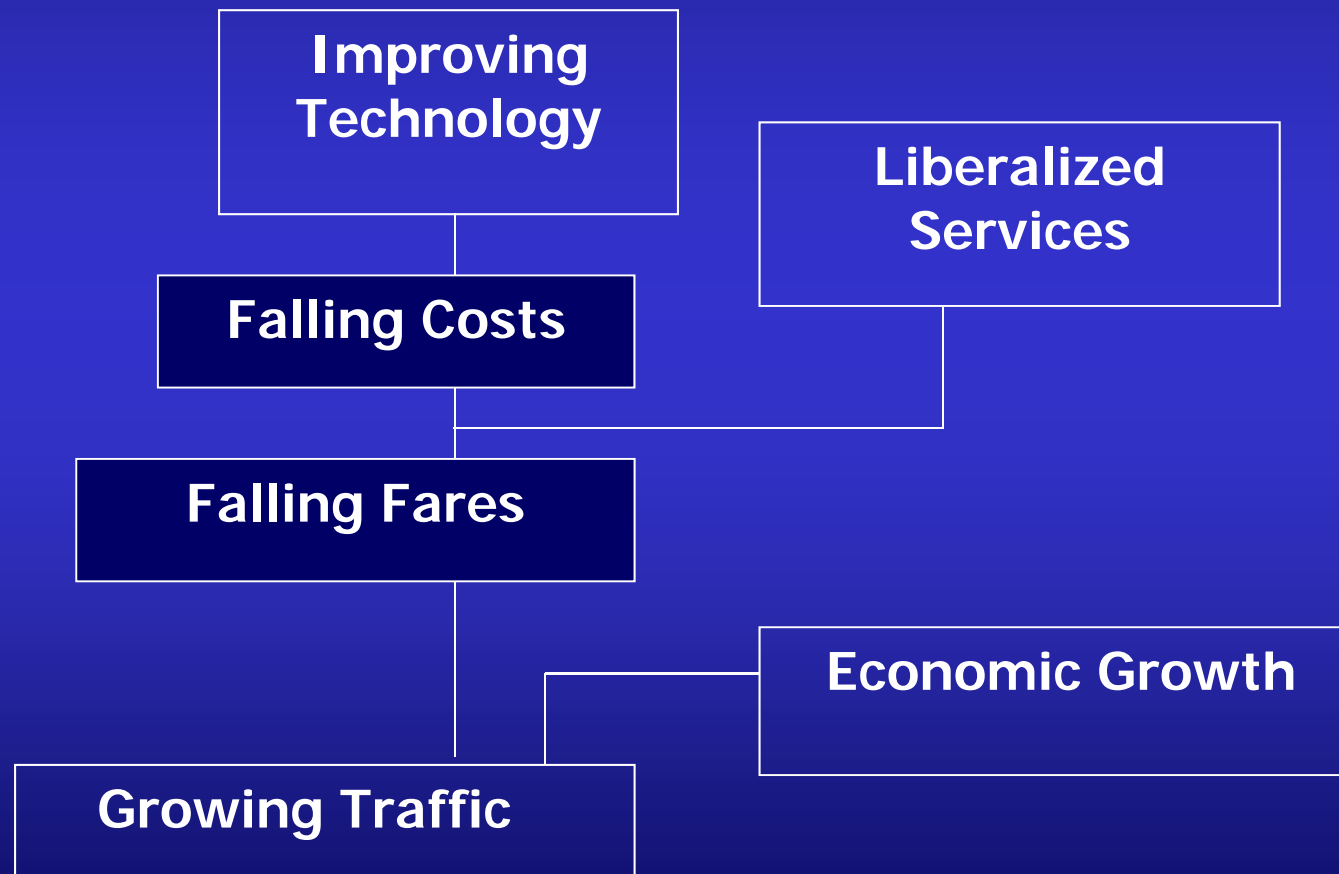
# Air transport vs Economic growth



Source: ICAO, IHS/ Global Insight



# The link between the promoting factors

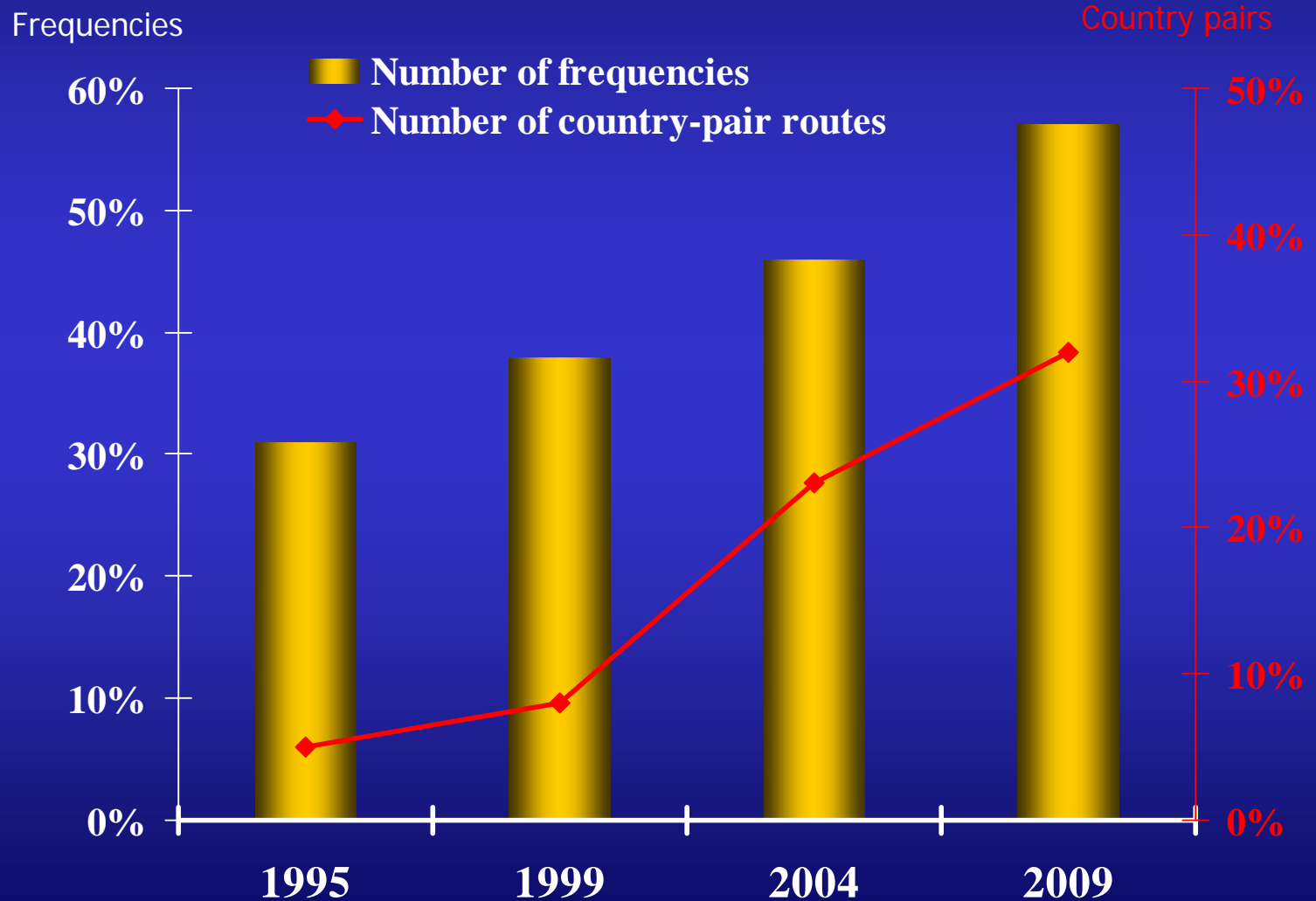






# Air transport conducted under liberal arrangements

As a % of international scheduled services



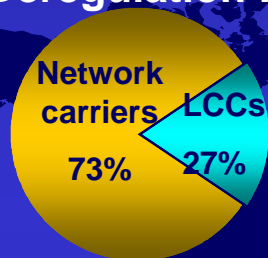
Source : ICAO



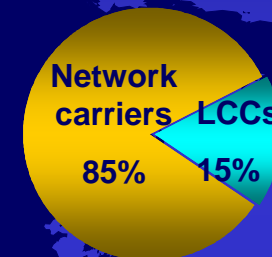
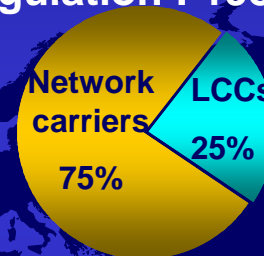


# Low Cost Carriers development

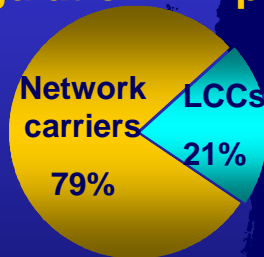
Number of LCCs : 15  
Deregulation : 1978



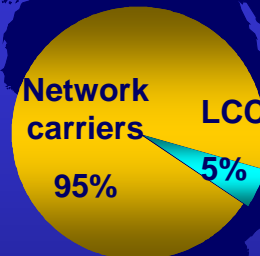
Number of LCCs : 45  
Deregulation : 1987- 1997



Number of LCCs : 12  
Deregulation : in progress



Number of LCCs : 38  
Deregulation : accelerating



Number of LCCs (Africa and Middle East) : 10  
Deregulation : uneven



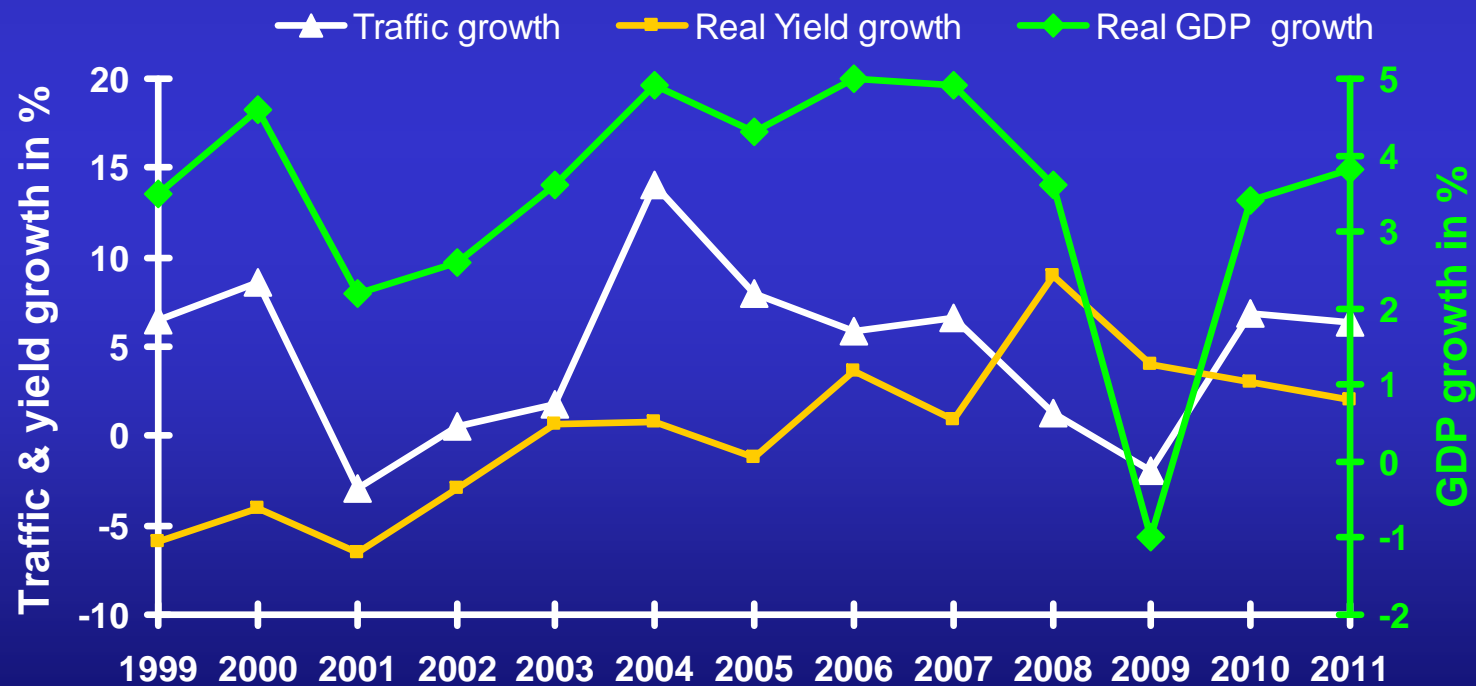
# Long-term traffic forecasting methodology

- \* **Approach:** Bottom-up methodology starting at the route-group level and building up to the global level
- \* **Data :** On-flight origin destination (OFOD) and traffic by flight stage (TFS). ICAO data series, representing some 85% of total international passenger traffic, cross-checked with other sources. Domestic data are collected from each State through the Form A which covers around 92 % of scheduled traffic worldwide
- \* **Models:** Econometric Modelling traffic by market considering quantitative relationships such as economic growth or pax yield as a proxy for the ticket price.
- \* **Geographical breakdown:** 9 forecasting regions providing 53 route groups (36 International , 8 Intra-region & 9 Domestic) plus 1 non-scheduled segment
- \* **Time horizon:** Air traffic for RPKs and FTKs have been produced for 20 years and extended to the 2040 horizon
- \* **3 Scenarios built:** Most likely, Low and High Scenarios



# Air travel demand drivers

- State of global economy (GDP growth)
- Airline ticket price. (measured in Yields)



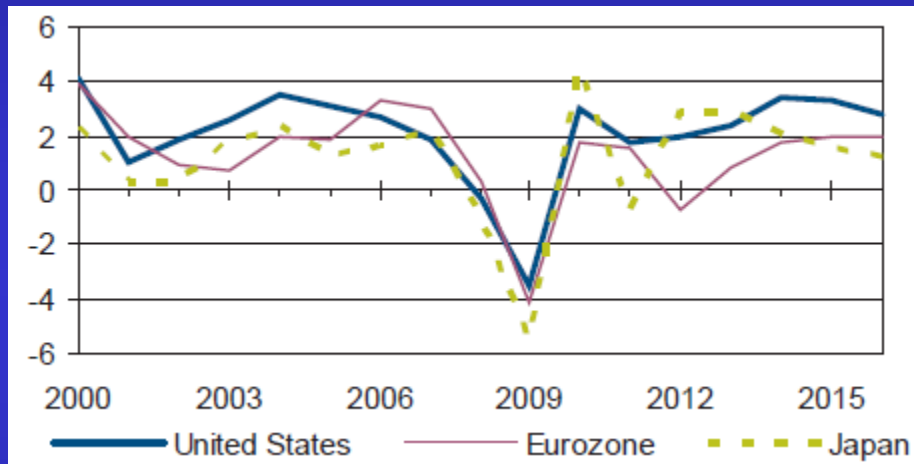
Source: ICAO, IHS/ Global Insight



# A two-speed world

**Favoring the expansion of some regional air travel markets**

Real GDP growth change in %



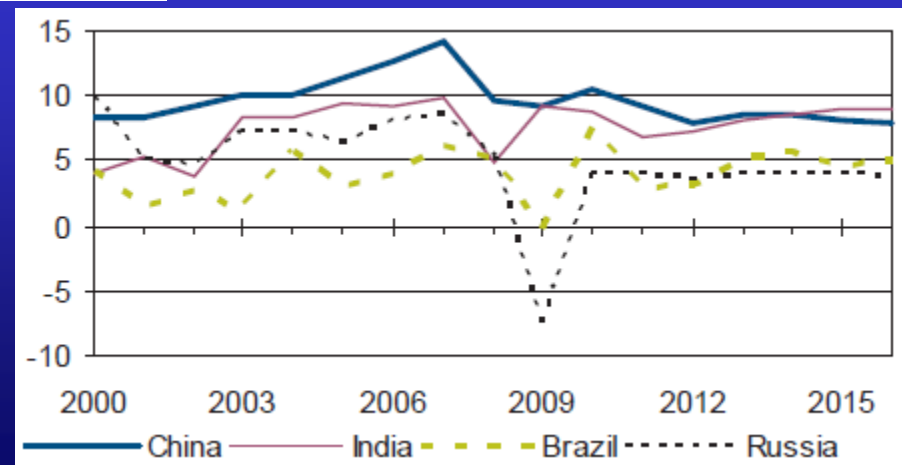
China forecasted to have as many as 100 million of their inhabitants travelling internationally by 2020

**China & India lead Emerging Markets and the BRIC\* in Real GDP growth**

Source: IHS Global Insight, Jan 2012

\*BRIC: Brazil Russia India China

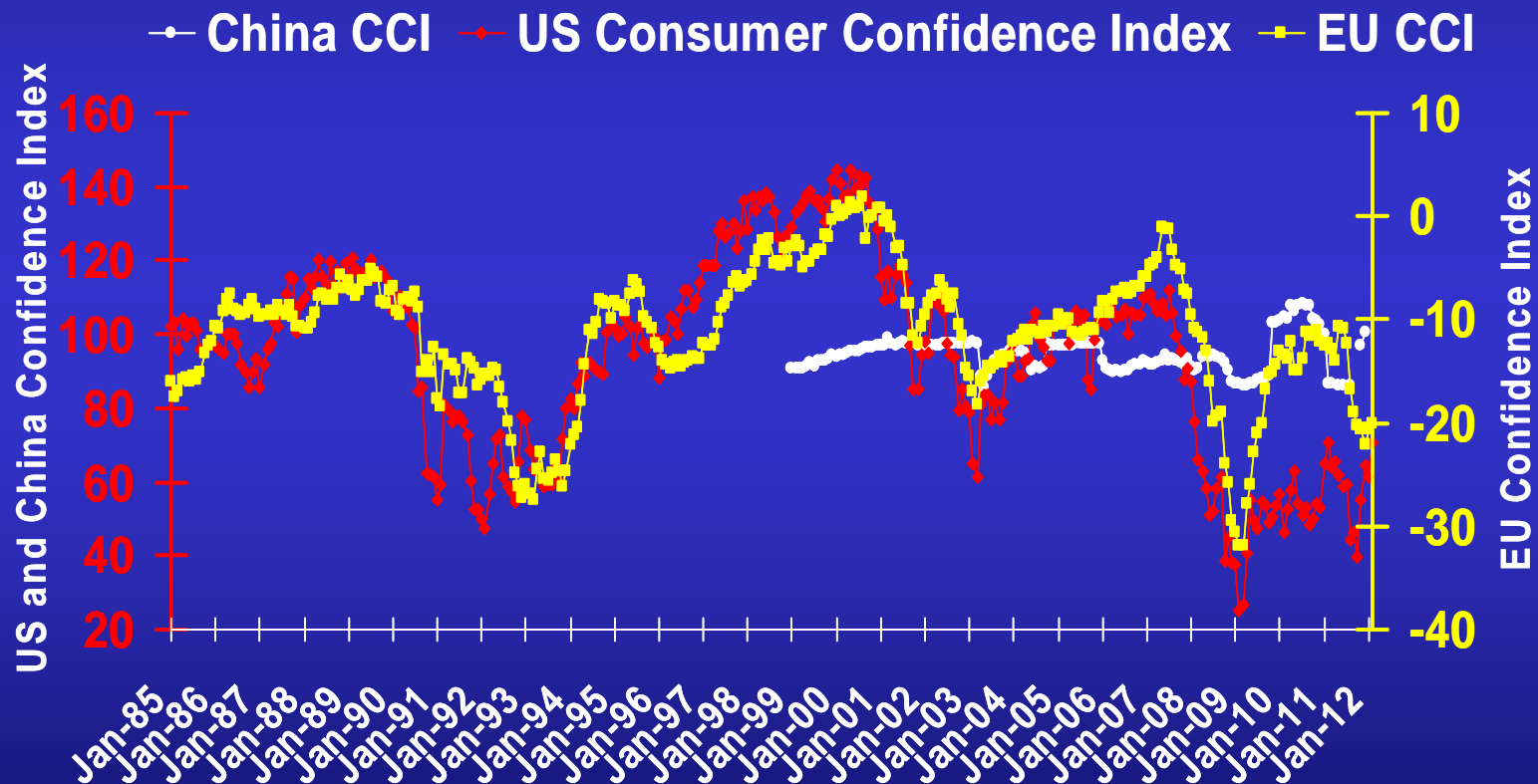
Real GDP growth change in %





# A key indicator for air travel demand

## Consumer Confidence Indexes (CCIs)



Source: IHS Global Insight



# Assumptions

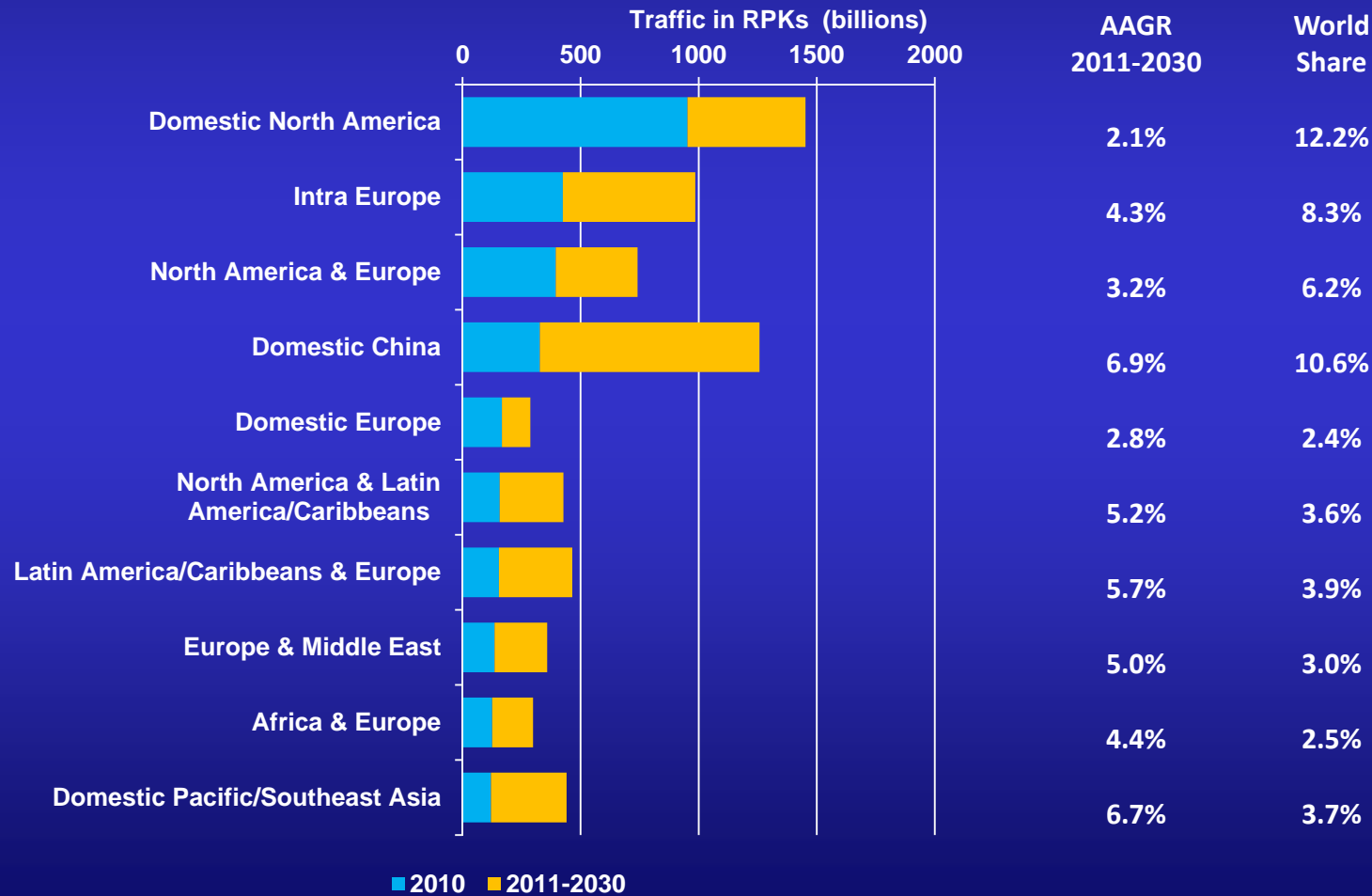
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- ❖ Air travel demand forecasts
- ❖ Unconstrained forecasts
- ❖ Oil price impact is included in each regional GDP forecasts
- ❖ Use of GDP at PPP\*
- ❖ Yields decrease or increase according to the specificity of the market

\*PPP: **Purchasing Power Parity** is an economic theory linking currency exchange rates to **prices paid for** goods and services in any two countries.



# Forecasts of 2010 Top 10 Traffic Flows

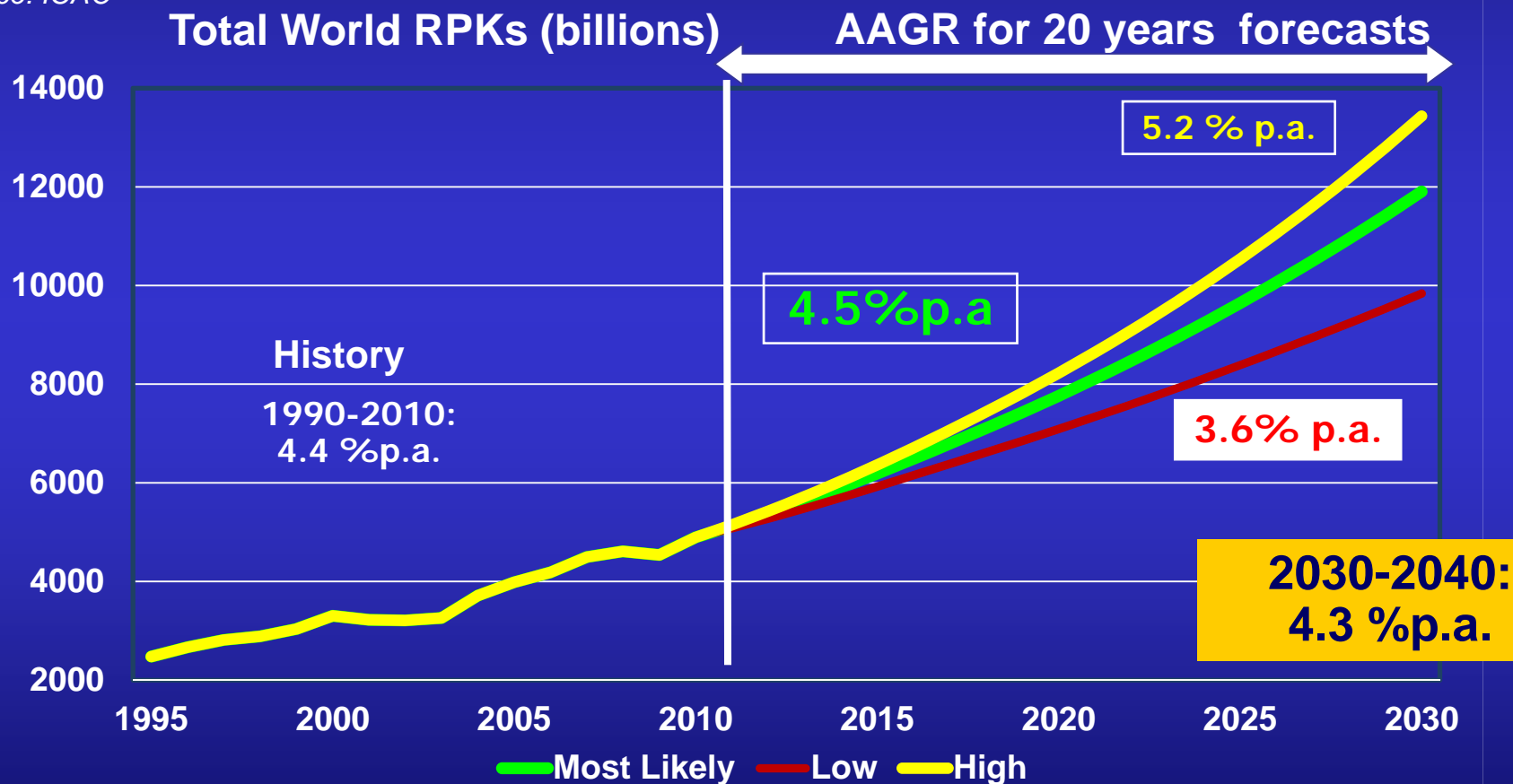






# Long-term Passenger traffic forecast results

Source: ICAO



High GDP scenario = +0.3% for developed countries & +0.6 for the developing countries  
Low GDP scenario = -0.5 for developed regions & -0.1 for the developing regions.



# Regional\* passenger traffic forecasts

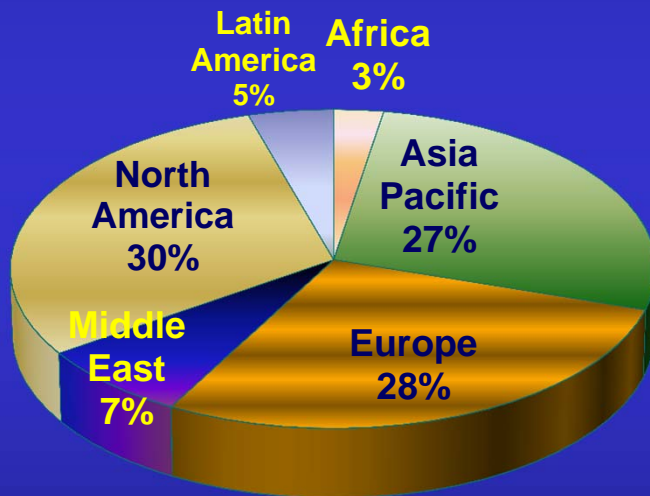
Pax Traffic	International (%)		Domestic (%)		Total (%)	
Region	Growth 2010-2030	Share 2030	Growth 2010-2030	Share 2030	Growth 2010-2030	Share 2030
North America	3.9	14	2.6	40	3	23
Europe	4.3	37	1.7	5	4.1	25
Asia/Pacific	5.7	32	7.1	47	6.3	38
Latin America	6.1	5	5.3	6	5.8	5.5
Africa	4.7	3	4.8	1	4.7	2.5
Middle East	5.2	9	4.8	1	5.2	6
WORLD	4.7	100	4.4	100	4.5	100

\*Traffic of airlines domiciled in each region expressed in RPKs growth and market shares

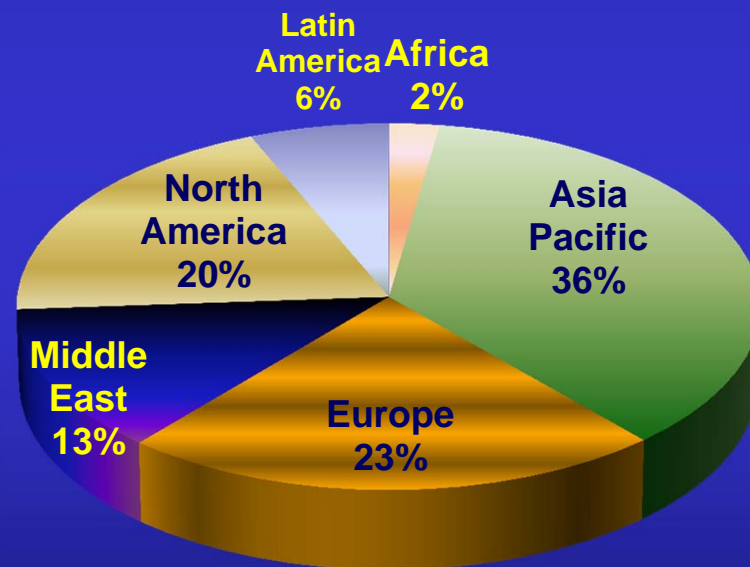


## Regional\* passenger traffic market shares

**2010**



**2030**

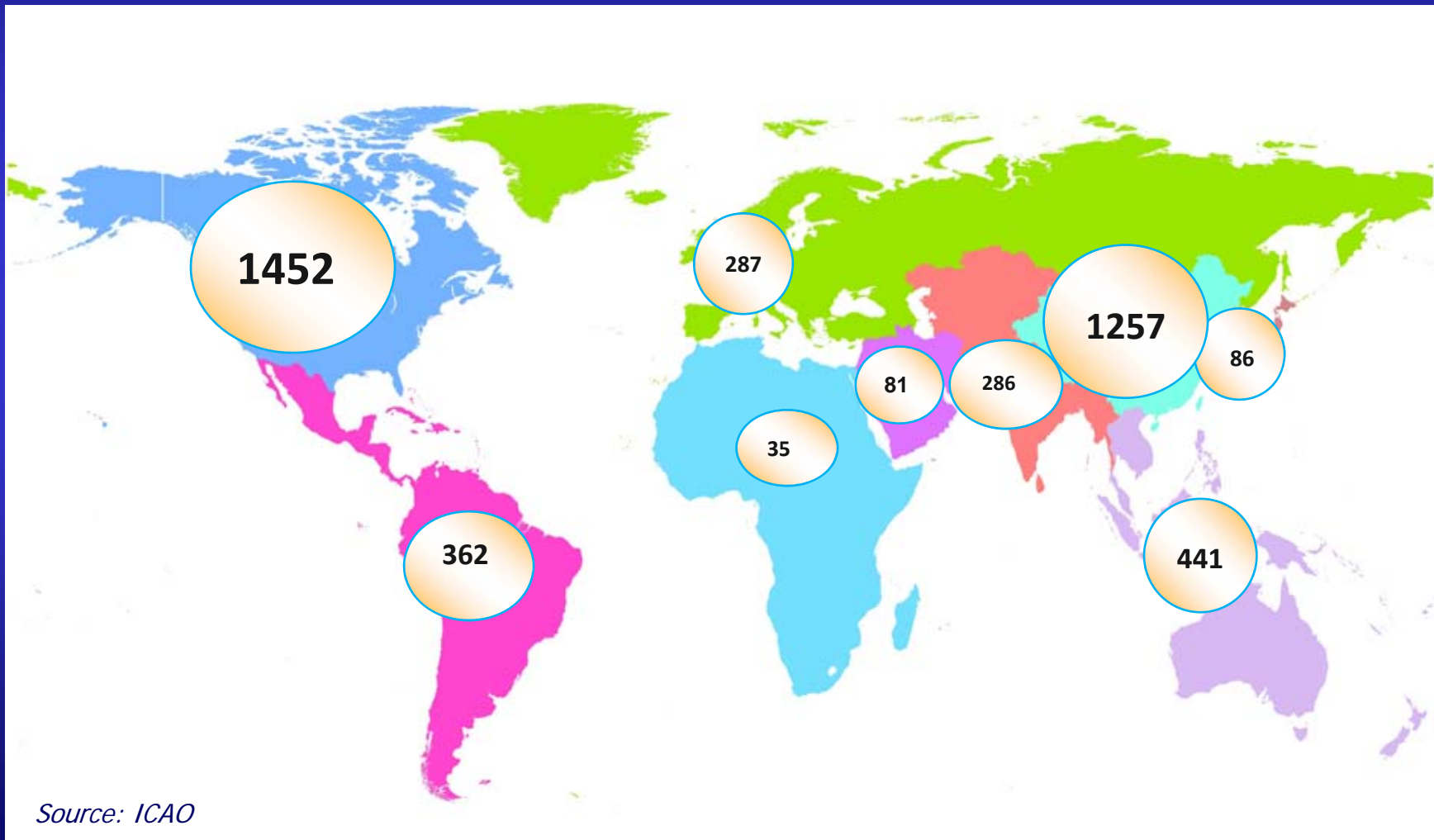


\*Traffic of airlines domiciled in each region expressed in RPKs market shares

Source: ICAO

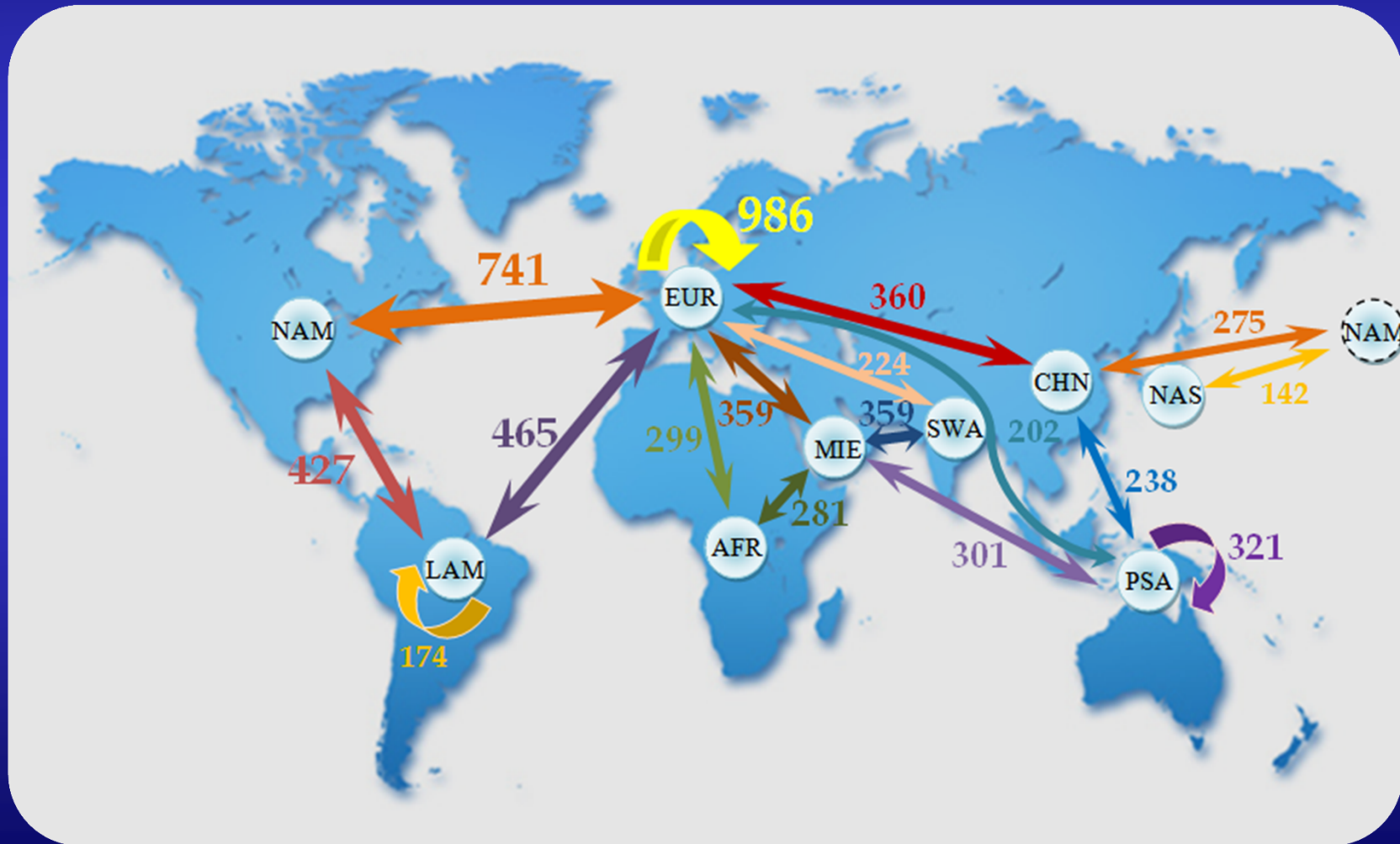


# 2030 Main Domestic markets





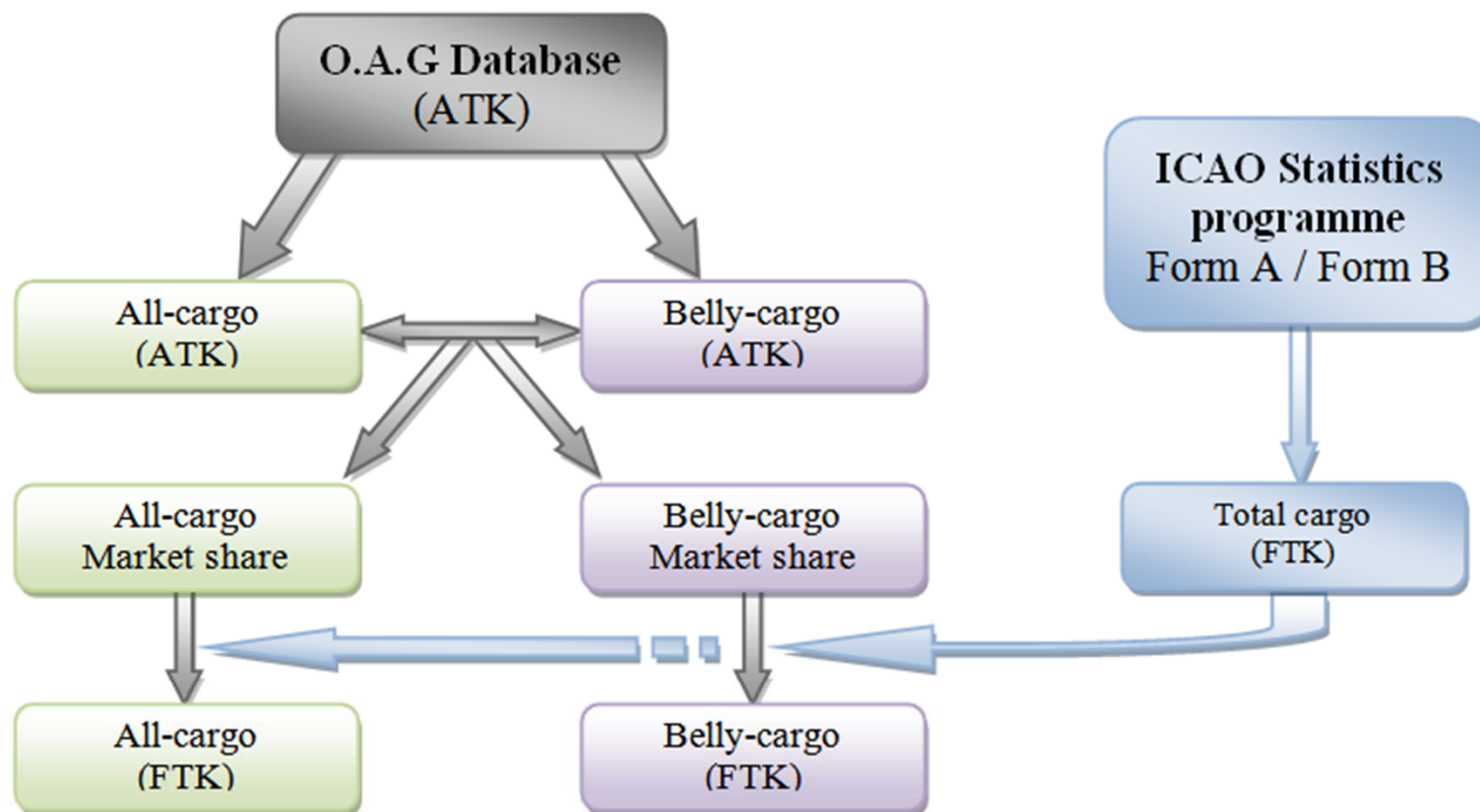
# Major International markets in 2030



Source: ICAO



# Air freight traffic data collection





# Air freight traffic forecasting methodology

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- ✓ 9 regions
- ✓ 9 domestic flows
- ✓ 38 inter-regional directional route groups
- ✓ 3 intra-regional flows





# Modelling Air freight traffic

- ✓ Tested explanatory variables:
  - GDP** (Origin and/or Destination)
  - GDP per capita** (Origin and/or Destination)
  - Trade** value by ton

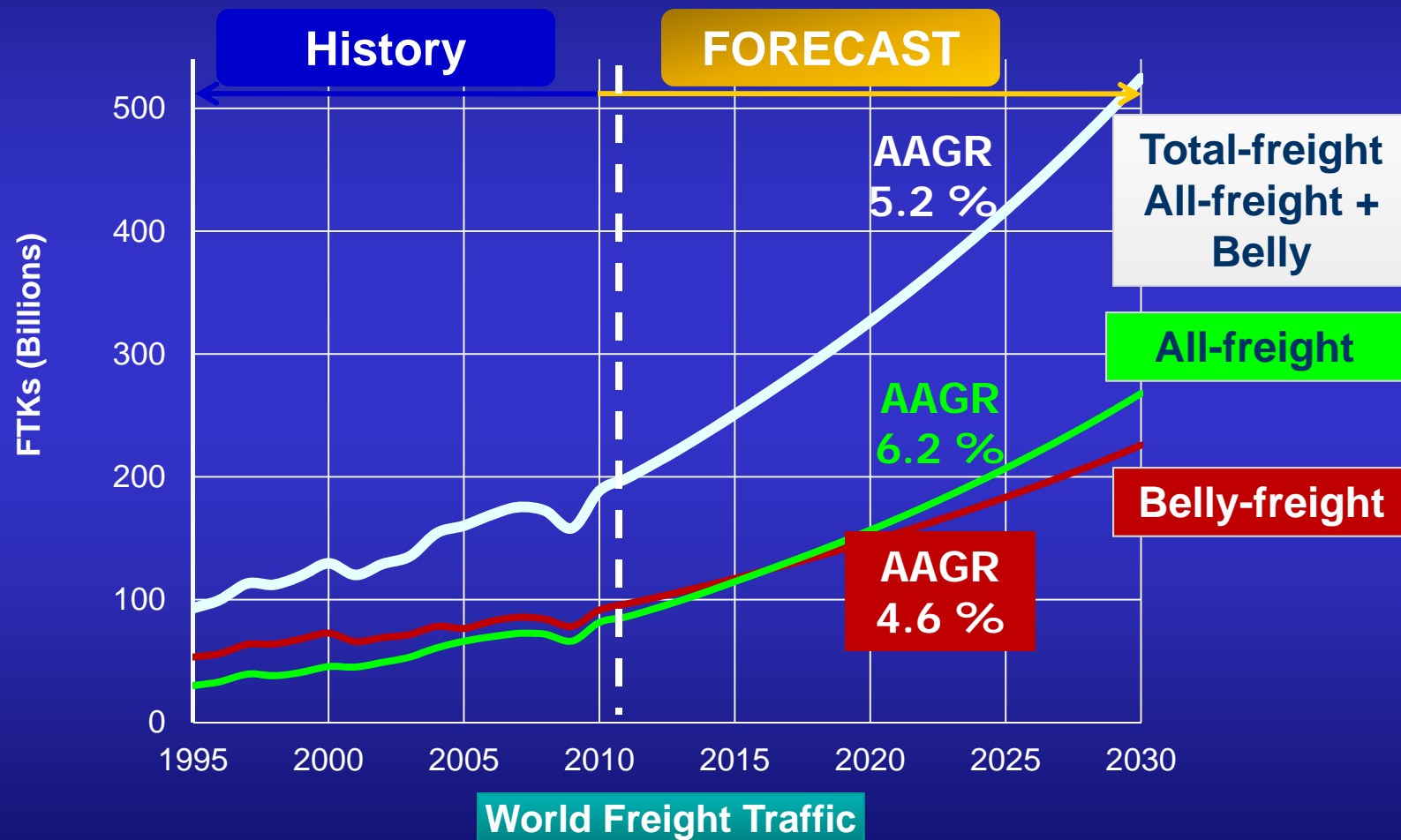
**ALL-FREIGHT**

- ✓ Tested explanatory variables:
  - RPKs**
  - GDP** (Origin and/or Destination)
  - GDP per capita** (Origin and/or Destination)

**BELLY-FREIGHT**

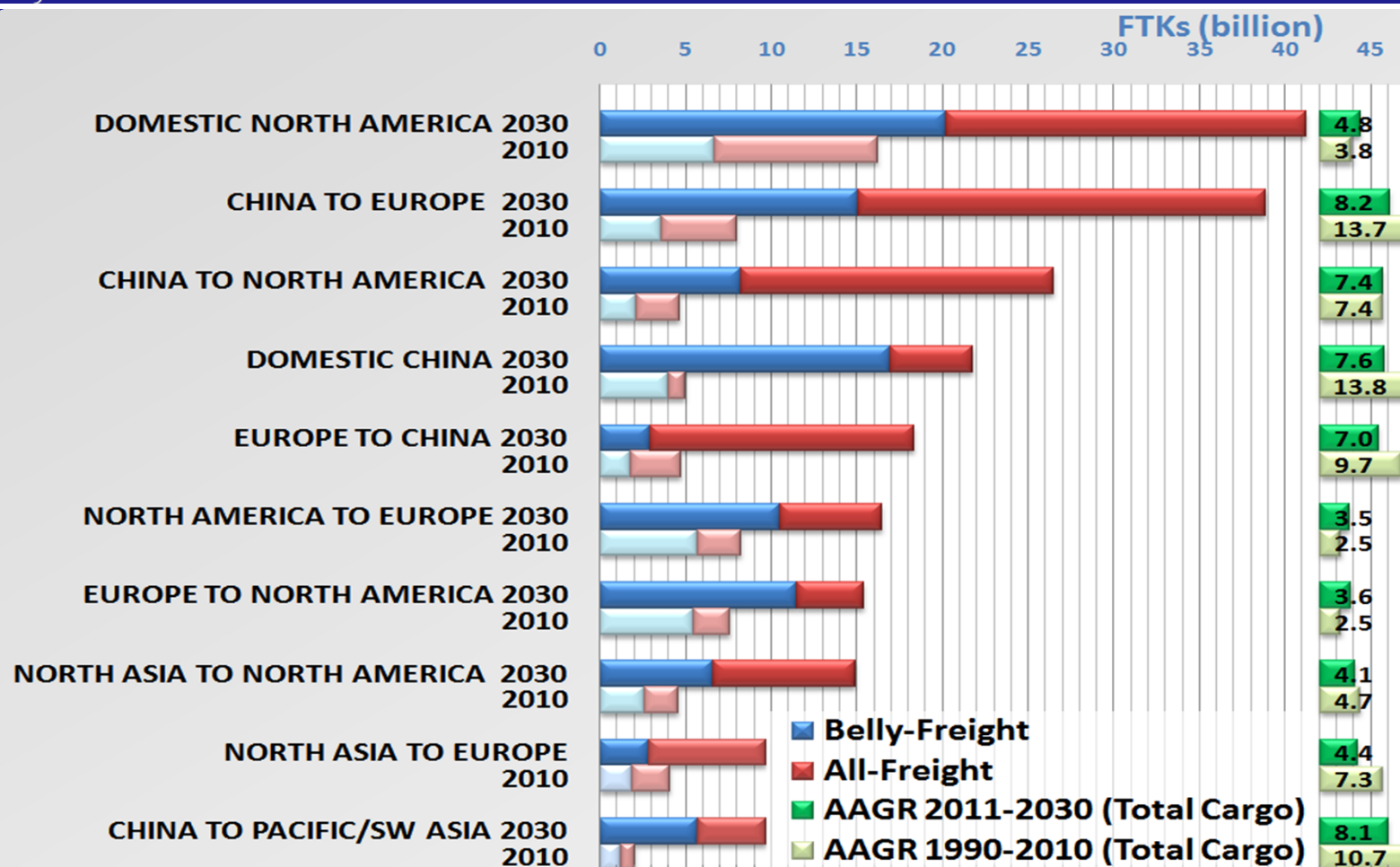


# Long term cargo traffic forecasting results





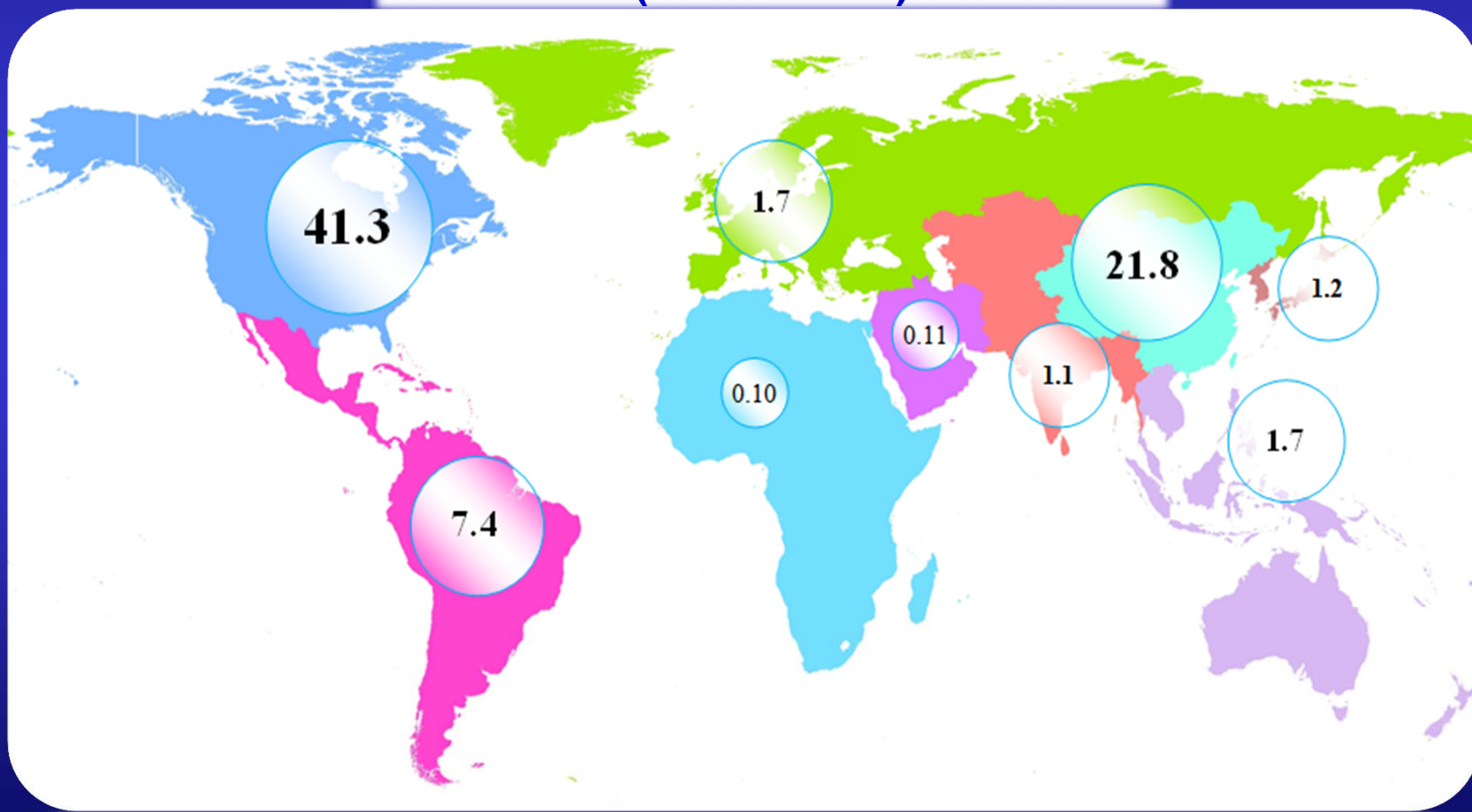
# Top ten air freight flows in 2030





# 2030 main Domestic air freight markets

**Total freight domestic traffic in 2030  
(Billion FTKs)**





# Aircraft movements forecasts

$$\text{Available seat-kilometres} = \frac{\text{Revenue passenger-kilometres}}{\text{Average load factor}} \quad (1)$$

$$\text{Aircraft-kilometres} = \frac{\text{Available seat-kilometres}}{\text{Average aircraft seating capacity}} \quad (2)$$

$$\text{Aircraft movements} = \frac{\text{Aircraft-kilometres}}{\text{Average stage length}} \quad (3)$$

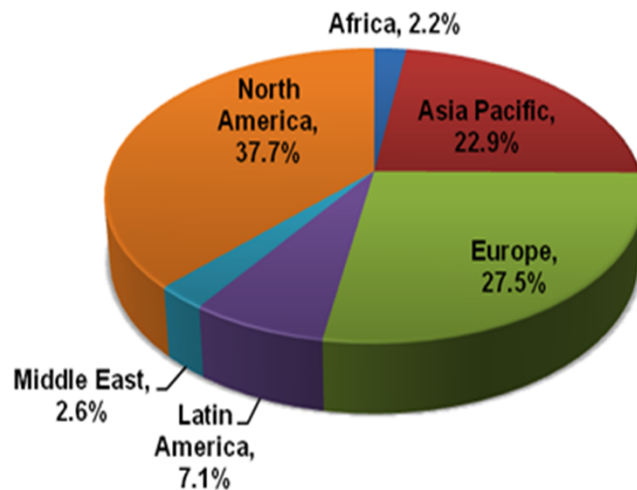
## Main assumptions:

- Growth in RPKs of 4,5% per annum
- Slight increase in average load factor from 76 (2011) to 79% in 2030
- Increase in average passenger aircraft size from 169 to 174 seats
- Growth in average aircraft stage length of 0,6% per annum

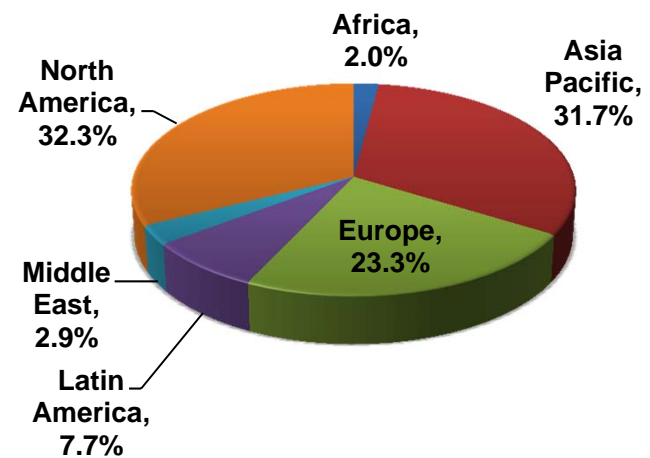


# 2030 Aircraft movement forecast

Aircraft movements 2010  
World total: 24.791 Millions



World total aircraft movements in 2030: 51.708 Millions





# ATCO ratios

- Average worldwide ratio of annual movements per ATCO in 2010 estimated at **370** movements per year
- Foreseeable increases in ATCO productivity (**SESAR/NextGen\***) = augmented productivity scenario
- Assumption: **555** annual movements per ATCO instead of 370 (i.e. 50% increase in annual ATCO productivity)

\* SESAR: Single European Sky ATM (Air Traffic Management) Research  
Next Gen: Next Generation Air Transportation System





# Results with increased ATCO efficiency

## Annual training needs and capacities between 2010 and 2030

(Attrition: 5% per annum; 555 movements/ATCO)

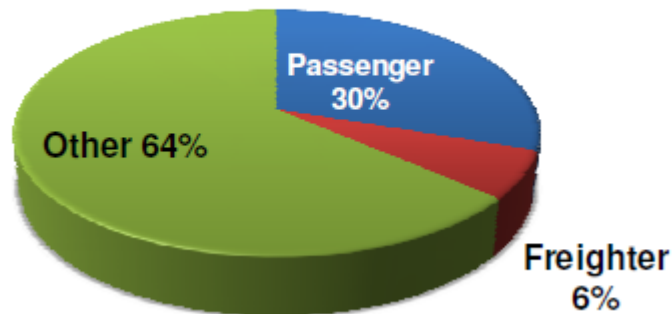
	Training needs	Training capacity	Shortage/ surplus
Africa	100	210	110
Asia/Pacific	1 862	1 865	3
Europe	967	1 440	473
Latin America	488	935	447
Middle East	155	90	-65
North America	1 770	2 200	430
World	5 342	6 740	1 398

Source: ICAO

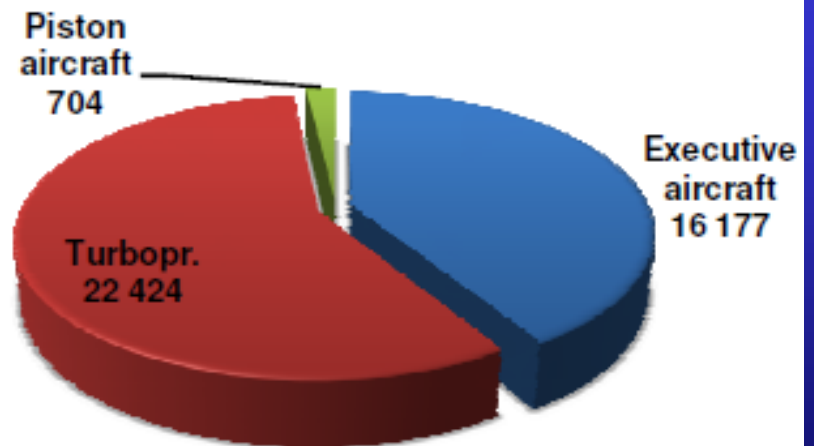


# 2010 fleet distribution by a/c groups

2010 aircraft group distribution (%)  
Total: 61 833



## Other aircraft breakdown





# Pilot and maintenance personnel per aircraft ratios

## Number of pilots per aircraft

### High scenario

Twin aisle	20
Single aisle	13
Cargo	8
Other	6

### Most likely scenario

Twin aisle	14
Single aisle	10
Cargo	8
Other	5

### Low scenario

Twin aisle	12
Single aisle	8
Cargo	8
Other	4

## Number of maintenance personnel per aircraft

Passenger aircraft	20
Cargo aircraft	20
Other aircraft	3



# Future pilots requirements\* vs training capacities

## Most likely scenario

### North America

	Pilots Needs	Capacity
ICAO	10 449	27 655

### Latin America

	Pilots	capacity
ICAO	6 250	1 945

### Middle East

	Pilots	Capacity
ICAO	2 458	860

### Africa

	Pilots	Capacity
ICAO	3 814	1 010

### Europe

	Pilots	Capacity
ICAO	15 552	7 955

### Asia / Pacific

	Pilots	Capacity
ICAO	13 983	4 935

### World

	Pilots	Capacity
ICAO	52 506	44 360

Source: ICAO

\*Estimate of average annual needs for 2010 to 2030 period based on various world fleet categories;: Regional and business jets, Turboprops, Single aisle, Twin aisles and Freighters

Training capacity is based on current figures without any incremental effect due to planned additional capacities

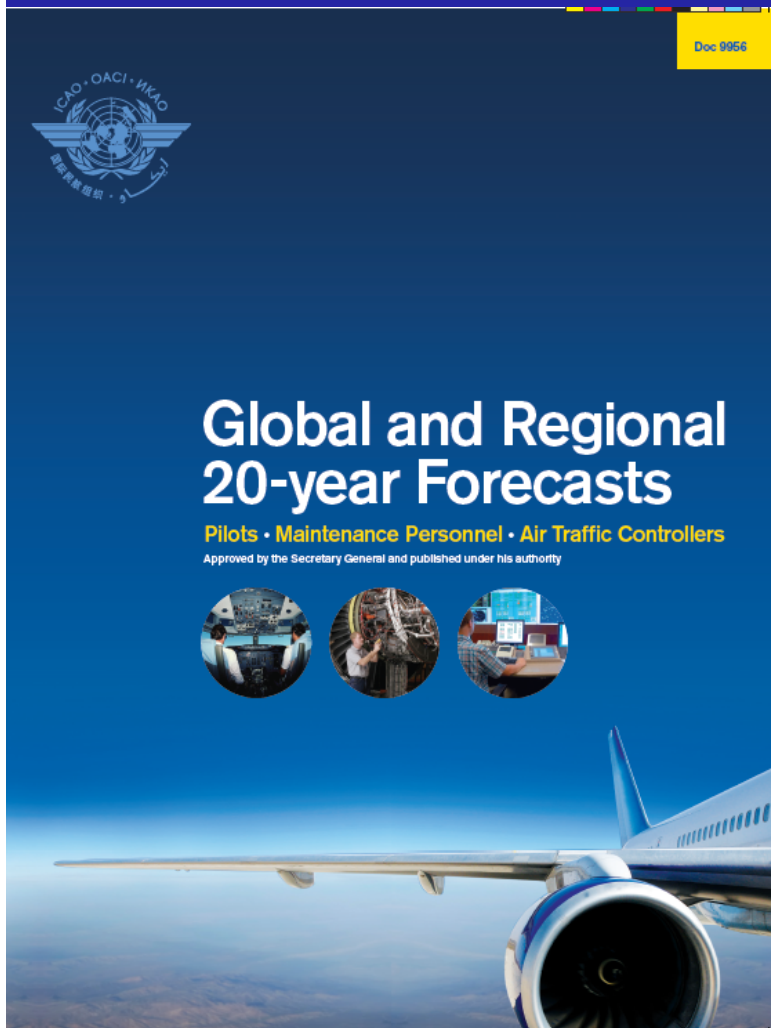


# Next Generation aviation professionals

## ICAO vision for NGAP

- The need for reliable statistics
- The « Best and the Brightest »
- Facilitating the use of competency-based approaches
- Removing regulatory obstacles
- A coordinating mechanism is required

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# AIR TRANSPORT SYMPOSIUM

18 – 20 APRIL 2012

visit website

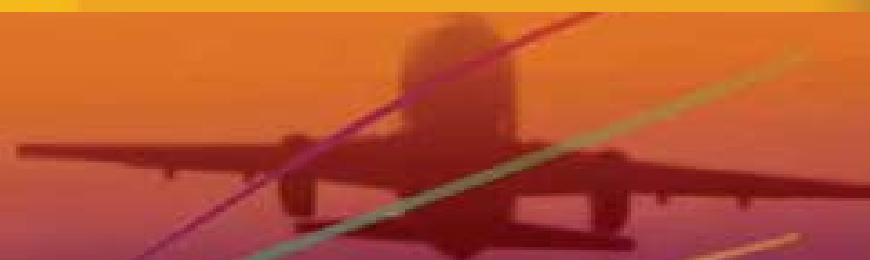


*In partnership with the Air Transport Research Society*

## **Strategies and Tools for Sustainable Air Transport**

18 – 20 April 2012, ICAO Headquarters, Montréal, Canada

Speakers will include high-level representatives from airlines, airports, States, air navigation services providers, aircraft manufacturers, financing institutions and international organisations. The event will attract a wide variety of professionals from the air transport industry, civil aviation authorities, academics, air transport lawyers and consultants.



1990

2010

2030

**Mark your calendar!**

**18 - 20 April 2012**

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